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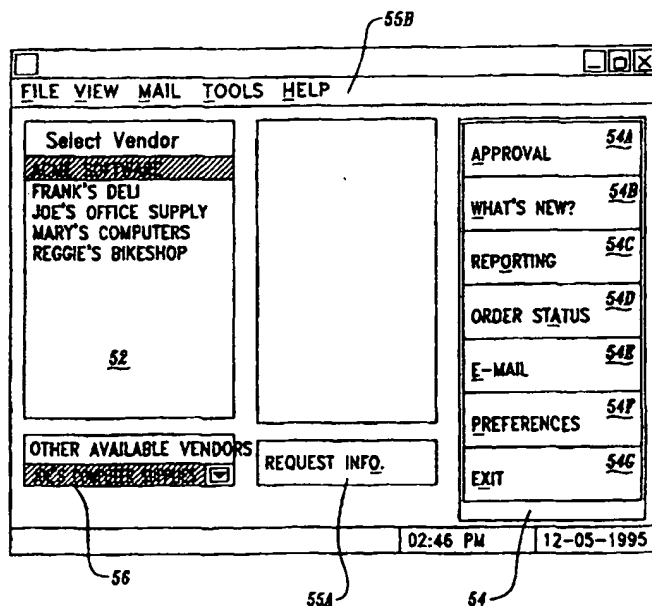
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(57) Abstract

A method and system for accessing multiple databases from multiple suppliers in a user friendly manner over a public data network. A user's graphical interface system (GUI) comprises main menu window (50), a supplier list box (52) and (56) for displaying the suppliers present in the catalogs accessible by a customer. The GUI system also comprises an approval button (54A) for determining approval or disapproval by the user for an order, a new button (54B) for displaying what is new on the system, a button (54C) for displaying past orders, and an order status (54d) for displaying an order status window.

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ELECTRONIC ORDERING AND ROUTING SYSTEM

Field of the Invention

This invention relates to methods and apparatus for product ordering between multiple customers and multiple suppliers and customized order routing and, more particularly, to methods and apparatus that allow for a customer to operate an order routing system through a single graphical user interface (GUI) with customized routing rules.

Background of the Invention

At the present, corporations, small and large alike, are continually searching for more effective and efficient ways of doing business both in-house and outside the company. Historically, purchasing departments create a bottleneck in the business process. Purchasing order (PO) agents process employee PO requests by searching through multiple hard copy catalogs for the items identified in the PO requests. The PO agents need considerable time to search and process the POs.

Computer use in purchasing departments has enabled PO agents to greatly improve their efficiency. Many suppliers store catalogs of their products on CD-ROMs and send the CD-ROMs to their customers. The PO agents electronically scan through the CD-ROMs to find the products they need. However, the PO agents can only use the CD-ROMs to search for products and cannot use the CD-ROMs for placing direct orders or routing the orders electronically for approval. Also, the PO agents must have multiple CD-ROMs for multiple suppliers. As a result making the task of searching for products from multiple suppliers inconvenient and not user-friendly. Even more inconvenient, the supplier must continually update the CD-ROMs and send them to every customer.

Recently, some large telecommunication companies and computer resource companies have developed systems that allow multiple customers to access databases of other companies over a public data network. AT&T and Lotus produce one such system, as shown in FIGURES 1 and 2. AT&T's Network Notes provides a public data network 30 that is a central platform for communication between multiple suppliers and multiple customers. Lotus Notes supplies the software for creating the interactive databases 34A-E in the servers 37-39 within the supplier 32, customer 31, and public data network 30 systems. As shown in FIGURE 1, suppliers create, in Lotus Notes, separately accessible databases defining various information. The supplier-created databases 34A-E auto-load into corresponding databases 34A-E on the public data network server 37, as shown in FIGURE 1. The loaded databases 34A-E are accessible by the customers at the other end of the system.

FIGURE 2 illustrates Lotus Notes' graphical user interface used at the customer's end. Lotus Notes provides access to the multiple supplier databases 34A-E located on the public data network 30. As shown in the envelope window 41, the three blocks 42A-C represent three different databases on the public data network 30. The customer enters any of the databases by selecting a database block 42A-C. This system is a drastic improvement over the CD-ROM technology, since the customer can access databases from multiple suppliers and send and receive information through the databases over a public data network 30. However, the customer can only access one database at a time in a not-so-user-friendly manner. For example, "database 2" 42B represents a catalog database and "database 3" 42C represents an order database. If the customer is searching within "database 2" 42B for the product, the customer must separately access "database 3" 42C before ordering products found in the search. Interacting with databases in this manner is anything but smooth. If a customer found in the catalog database a large number of products to order, the customer must remember the name of the products when placing an order in the orders database. Also, the Lotus system described fails to provide any method for internal customer order routing.

The present invention is directed to overcoming the foregoing and other disadvantages. More specifically, the present invention is directed to providing a GUI for fluid user-friendly access to multiple databases that are represented on a public data network and to providing a customer, rules-based routing system.

Summary of the Invention

In accordance with this invention, method and apparatus for accessing multiple databases for multiple suppliers in a user friendly manner over a public data

network is provided. A user's GUI displays a list of suppliers that link to the supplier's databases via a public data network. A customer selects a supplier from the supplier list displaying a product list from the supplier selected. The suppliers on the list link to corresponding databases on the public data network or on the customer's local network. The displayed product list is part of the electronically stored catalog database that the supplier prestores. The customer selects desired products from the product list. The selected products are automatically entered into a preformatted order form. Upon completion of the order, the order form automatically routes through a predefined routing approval process. After successful completion of the routing approval process, the order form is electronically sent to the selected supplier.

In accordance with other aspects of the present invention, the routing approval process includes customer defined rules, each rule contains a minimum rule type, a minimum total dollar amount and a routing destination. A single routing designation can be different for an identical order originated by two different user's within the customer's system.

Brief Description of the Drawings

The foregoing aspects and many of the attendant advantages of this invention will become more readily appreciated as the same becomes better understood by reference to the following detailed description, when taken in conjunction with the accompanying drawings, wherein:

- FIGURE 1 is an illustration of the system of the present invention;
- FIGURE 2 is an illustration of a graphical user interface of the prior art;
- FIGURES 3-17 are window screen shots of the GUI of the present invention;
- FIGURES 18-20 are window screen shots of user display messages of the present invention; and
- FIGURES 21A-21B are window screen shots used for customizing the routing system of the present invention.

Detailed Description of the Preferred Embodiment

FIGURE 1 is an illustration of the background architecture and databases of the present invention. The essential base architecture creates a system for communication between customers and suppliers over a public data network 30. The customer 31, supplier 32, and public data network 30 each has respective servers 39, 38 and 37 for storing multiple databases and interactively communicating. For the purpose of this invention, five databases provide an essential platform for the GUI.

A supplier database 34D stores information about suppliers accessed by the customers. An arrow points one-way from the supplier database 34D on the supplier system 32 through the public data network 30 to the supplier database 34D on the customer system 31. According to the arrow, only the supplier edits the supplier database 34D. A catalog database 34B stores a list of the products and product prices in supplier's catalog. A company database 34A stores information regarding the companies that produce the products listed in the catalog database 34B. A user profile database 34C stores customer billing and shipping information as well as information on every user within the customer's system 31. A user profile database 34C also stores purchasing preferences and other user related information. An orders database 34E processes electronic orders and mail. Data, within the orders database 34E, passes through the public data network 30.

Visual Basic™ (VB) is the preferred GUI programming language of the present invention. However, almost any event-driven GUI programming language can substitute for VB. Lotus Notes' application programming interface (API) provides the communication link to Lotus Notes' dynamic linked libraries (DLLs). Because VB accesses standard dynamic linked libraries by using declare statements that are unable to communicate with Lotus Notes' DLLs, a linking program such as VB Link, available from Brainstorm, provides the necessary communication link between Lotus Notes' DLLs and VB. It can be appreciated to one of ordinary skill in the art of software programming that the linking software used in the present invention can be substituted by other DLL linking programs, such as Hightest, or by programming the link at a C based software language level.

FIGURE 3 is an illustration of the first interactive window that appears upon activation of the GUI of the present invention. A first non-interactive screen, a splash screen or advertising screen, appears while the customer's system is initiating the GUI. This first interactive window, as shown in FIGURE 3, is a main menu window 50. On the left side of the main menu window 50, a supplier or supplier list box 52 displays the suppliers who at present are listing catalogs accessible by the customer. For example, in FIGURE 3, the customer has access to catalogs from Egghead Software, Frank's Deli, Joe's Office Supply, Mary's Computers, and Reggie's Bike Shop. In the center of the main menu window 50 is a graphics area 53 displaying graphic designs associated with the highlighted supplier in the supplier list box 52. If the supplier Egghead Software is highlighted in the supplier list box 52, the graphics box 53 displays the graphically designed word "Egghead Software" or other graphic design associated with Egghead Software. Other available suppliers

not directly accessible by the customer and on the public data network 30 are listed in the other suppliers list box 56. Customer access to supplier catalog databases is not automatic and must be preapproved through the other suppliers list box 56. The other supplier list box 56, located below the supplier list box 52, has scroll capabilities in a pull-down menu style. Highlighting a supplier in the other supplier list box 56 accesses a request information button 56A. The request information button 56A appears in the center of the main menu window 50, below the graphics area 53. Selection of the request information button automatically activates a preformatted, preaddressed message for the customer to edit and send electronically to the supplier. Double clicking on a supplier name or highlighting the name and pressing the Enter key displays an icon for that supplier.

As shown in FIGURE 4, a buttons area 54 in the main menu window 50 displays vertically arranged buttons linked to separate functions relating to a highlighted supplier in the supplier list box 52. Selection for all buttons is performed by activating the cursor over the button, and by depressing the button on the keyboard that relates to an underlined letter of a word on the button or by selecting a corresponding function from a pull-down menu 55B.

An approvals button 54A, located at the top of the buttons area 54, accesses window 110, as shown in FIGURE 17A. Window 110 displays a list of orders requiring approval or disapproval by the user. The list displays who authored the order, when the order was entered and the supplier of the order. When the user selects an order from the list of orders, window 112 is displayed, as shown in FIGURE 17B. Window 112 is a read-only version of window 80 in FIGURE 12 except for interactive buttons 113 and 114 at the bottom of window 112. The order is approved or disapproved by selecting either approve button 113 or reject (disapprove) button 114. As shown in FIGURE 17C, comments window 116 appears after selection of either button 113 or 114 and allows the user to insert a comment regarding the approved or disapproved order. A comment is required after selection of the disapprove button 114. All comments inserted are placed on an electronic mail message, shown in window 117 of FIGURE 18. The electronic mail message is sent to the originator of the order and it includes a statement describing what action, approval or disapproval, was performed on the order, who performed the action, when the action was performed and who is next in the routing process.

A what's new window 60, illustrated in FIGURE 5, appears upon selection of a what's new button 54B from the main menu window 50. The information displayed in the what's new window 60 is supplier supplied information or news

about various products and prices the supplier wants to highlight to the customer. The supplier database 34D provides storage of the data in the what's new window 60. A reporting window 61, shown in FIGURE 6, appears upon selection of a reporting button 54C from the main menu window 50. In the reporting window 61, the customer selects from various reporting display options of past orders. The customer selects the sorting of past orders by date, supplier, user, or item.

Activation of an order status button 54D located below the reporting button 54C in the main menu window 50 displays an order status window 63, shown in FIGURE 7. An order list window 64 is displayed in the upper left portion of the order status window 63. The order list window 64 displays a list of all the orders that are in process, complete, or rejected. Single clicking on an order in the order list area 64 displays an order number, PO release number, status, process date, shipping method, number of line items in the order, subtotal of the order, tax, freight, miscellaneous charges, and total in a display area 65 to the right of the order list area 64. Also within display area 65 is a delete status info button for deleting the displayed order from the order list window 64. Upon double clicking on a purchase order in the order list area 64, an item display area 66 is presented in the lower portion of the order status window 63. The item display area 66, a scrolling window, displays some details of a highlighted purchase order. The information displayed includes each product ordered, quantity of each product shipped, quantity back-ordered, and a process date of each product ordered. If an order was rejected, a reason for the rejection appears upon selection of the rejected purchase order in the order list area 64. The orders database 34E stores the data supplied to the order status window 63.

Selection of an e-mail button 54E in the main menu window 50 provides for reading or sending memos of a supplier highlighted in the supplier list window 52. FIGURE 8A is an illustration of a read memo window 68, and FIGURE 8B is an illustration of a send memo window 69 displayed upon user designation. The read memo window 68 displays common electronic mail fields such as date, time, to, from, cc's, and subject, as well as the body of the message. Buttons within the read memo window 68 allow the customer to move to the next or previous message, return to the main menu window 50, or reply to the message that is presently displayed in the read memo window 68. Customer selection of send memo or a reply button in the read memo window 68 displays a send memo window 69. A main portion of the send memo window 69 provides a place for insertion of a message. Generally, the "to" field in the send memo window 69 is a default setting for the current supplier

selected. Activation of a send button in the send memo window 69 sends the message to the supplier. The orders database 34E provides the communication platform for all electronic mail transactions.

5 A preferences button 54F, on the main menu window 50, provides customization of various features of the application through user preference windows 70A and 70B, in FIGURES 9A and 9B. A user preference window 70A provides user definable titles for comment lines displayed later in a comments section of an order form. Another user preference window 70B provides user customization of the background and foreground of the application windows.

10 The customer accesses a catalog database by double clicking on the supplier name within the supplier list window 52 or highlighting the supplier name and pressing the Enter key. After the selection of a supplier, a catalog menu window 72, seen in FIGURE 10, for the supplier appears listing the products that are currently available from the supplier. A product window 73 within the catalog menu
15 window 72 displays a description of the product, a product's stock keeping unit (SKU), a unit price of the product, a quantity of the product selected by the user, and an extended price calculated from the quantity selected by the customer. The supplier customizes product prices in the product window 73. In other words, a reliable customer of the supplier may negotiate for lower prices on certain products.
20 Each product and the related information are displayed line by line within the product window 73. The product window 73 has a scroll bar for accessing products above and below what is currently displayed in the product window 73. A sort order window 74 provides the user with a number of options for product display order in the product window 73. The sort window 74 is a scrolling pull-down window and is
25 located above the right portion of the product window 73. A scrolling pull-down category window 75 located above the left portion of the product window 73 displays the present category of products displayed in the product window 73. The pull-down category window 75 also provides for quick jumps to different categories of products within the catalog. A product data area 76 below the product window 73 displays
30 supplier-supplied data relating to a highlighted product in the product window 73. As shown in FIGURE 10, the product data area 76 displays information relating to the Xtree Gold for Win product highlighted in the product window 73. If more information is available for a highlighted product, a product info button 77 lights up and shows a magnifying glass icon on the button. To view extra product
35 information, the customer selects the product info button 77 to display a product information window 79, as shown in FIGURE 11. The product information

window 79 displays a product's part number, description, and price for the product, as well as a scrollable list of product highlights and a scrollable list of system requirements. Also, an image of the product is available. The catalog database 34B stores all the information displayed in the catalog window 72.

5 The customer begins order processes by first single clicking the cursor on a desired product in the product window 73. The customer enters desired quantity of the highlighted product after selecting the Enter key. The bottom right corner of the catalog menu window 72 displays a running tally of the number of line items selected and the cost. As shown in FIGURE 10, the customer has selected four Xtree Gold
10 for Win products at a total price of \$258.96. Since the Xtree product has been the only item entered so far, the number of line items selected are displayed at the bottom right portion of the catalog menu window 72. The order total is displayed to the left of the number of line items selected. When the customer completes selection of the desired items, the customer selects a complete order button 78 located above
15 the number of items and cost, to the right of the product information button 77, and below the right side of the product data area 76.

 The selection of the complete order button 78 activates the complete order window 80, as shown in FIGURE 12. At the top of the complete order window 80 is a bill-to-address area and to the right of the bill-to-address area is a ship-to-address
20 area. The bill-to-address block 83A within the bill-to-address area displays the name and address of the entity being billed. The billing address is unchangeable for the preferred embodiment of this invention. However, the window provides multiple billing addresses accessible through a scrolling pull-down window in a bill-to-address block 83B. A bill-to-attention block 83C allows the customer to specify a
25 billing entity or person at the billing address. The ship-to-address area is very similar in layout to the bill-to-address area. A scrolling pull-down ship-to block 83B is located at the top of the ship-to-address area. A ship-to block 82B provides for selection of or entry of shipping addresses. Below the ship-to block 82B is a ship-to-address block 82A. The customer identifies shipping location in the ship-to-address
30 block 82A. The user profile database 34C stores shipping and billing information. Below the ship-to-address block 82A is an attention block 82C for identifying a person at the shipping address. A shipping and payment area 86 are located immediately below the bill-to and ship-to areas. Cost center, purchase order number, and release number are user field blocks included in the shipping and payment
35 area 86. The customer supplies information for these blocks or the information is preprogrammed into the system. A ship via block within the shipping payment

area 86 contains selectable shipping methods in a pull-down scrollable window. Located in the center of the shipping and payment area 86 is a credit card button for accessing a credit card window 90, as shown in FIGURE 13. In the credit card window 90, the customer enters credit card type, card number, and expiration date
5 into separate fields. The credit card type field provides manual insertion of a credit card or selection from a pull-down scrollable window. The orders database 34E stores credit card information.

A PO number is entered, for alternate payment means, into a purchase order number field block within the shipping and payment area 86. A credit card or a PO
10 number must appear for the application to place an order. Below the shipping and payment area 86 is a line item listing area 84A. In the line item listing area 84A, the products are listed line by line including a part number, description of the product, the prenegotiated unit price, the quantity ordered, and the total amount of the quantity ordered for that product. Below and to the right of the line item listing area 84A is an
15 order subtotal block 84B that automatically lists the total of all products with a quantity selected within the line item listing area 84A. Within the complete order window 80, the customer can access product information by highlighting the product in the product area 84A and selecting an item information button 89 located at the bottom of the complete order window 80. Also at the bottom of the complete orders
20 window 80 is a comments button 88. A user preferences window 91 appears upon selection of the comments button 88, as shown in FIGURES 14A-C. The customer enters comments for each line item product listed in the line item listing area 84A. Comments regarding line item products are entered in a line item page 92. Multiple lines are presented with line titles previously entered by the user in the user
25 preferences window 70A, as shown in FIGURE 9A. In the upper right portion of the line item page 92 is a horizontal scroll bar for scrolling through the products listed by line item in the line item listing area 84A. In the lower left portion of the line item page 92 is an indicator block showing the product's item number and the total number of line items. As shown in FIGURE 14B, a shipping page 93 has a large
30 scrollable text area providing entry of comments directed toward shipping. Finally, in FIGURE 14C, the customer enters PO comments into a PO page 94 in a large scrollable text area. Also, in FIGURE 12, an SKU info button 89 to the left of the comments button 88 accesses the product information window 96, shown in FIGURE 15. Selection of a catalog selection button 81 located left of the SKU info
35 button 89 returns the customer to the catalog menu window 72 for placing more

items on the order. Left of the catalog selection button 81 is a main menu button 98 that returns the customer to the main menu window 50.

Once the order is complete, the customer selects a send order button 87, located in the lower right corner of the complete orders window 80. The order is sent
5 directly to the supplier or through the preprogrammed order routing process within the customer's system prior to being electronically sent to the supplier. If an order needs approval, window 119 appears after activation of the send order button 87, as shown in FIGURE 19. Window 119 displays a list of who must approve the order before it is sent to the supplier and prompts the user to begin the routing process or
10 return to the order for further order editing. If the user chooses to continue the routing process, the first user on the approval list automatically receives an electronic mail, shown in window 120 of FIGURE 20. The electronic mail indicates that an order awaits approval. The electronic mail process is repeated as the order travels to each approver indicated in window 119. Once every approver on the approver list
15 approves the routed order, the order is sent to the supplier.

Prior to execution of the routing process, certain parameters must be preprogrammed into the customer's system. A user of the GUI is defined as a customer employee, uniquely defined within the databases of the customer's system. Each user is defined by the department in which the user works, the role of the user,
20 and the user's authorization level. The department is the company's department or division where the user works, i.e., accounting, sales, downtown branch, etc. According to the present invention, the company can create as many department titles and authorization level titles as needed. However, presently there are only three differently defined user roles. The three user roles are requisitioner, buyer and
25 administrator. A requisitioner is defined as a user all of whose work orders go through a requisition approval process. A buyer is one that may not need approval for some orders and the administrator sets the rules for the requisition routing.

Predefinition of an approvals list is necessary prior to creation of routing rules. The present invention provides a list of eight hierarchical slots for entering
30 position titles of users involved in the routing process. For example, an administrator would enter the term "employee" into slot 1, "division head" into slot 2, "department head" into slot 5, "vice president" into slot 7 and "president" into slot 8. This list of titles entered by the administrator is accessible by every user within the customer's system. Each user enters the name of the employee into the slot number that
35 corresponds with the administrator entered title of the slot number. For example, if the user's division head is John Smith, the user will enter the name John Smith into

slot 2. The administrator also has the ability to assign numbers to a specific user. For example, if user John Doe is a special purchasing agent, the administrator may assign a number, beginning with 100, to John Doe.

The final predefined data is the administrator entered customer or company routing rules. As shown in FIGURE 21A, rules window 125 provides adding, deleting and updating of rules. Every rule is defined by one of three rule types: cumulative; best; and override. Defined by the letter "C", cumulative rules apply together and all the approvers specified by those rules are added to the routing list. Defined by the letter "B", when more than one best rule is true, the best rule that tests true with the highest dollar amount is the only rule that applies. The override rule is defined by the letter "O" and when an override rule applies, the routing process ignores all applicable best and cumulative rules and routes to the approver(s) of the override rule. The type information is contained in a customer data database.

The rules contain six different sets of field data that apply to either the data describing the originator of the order or the data within the order being routed. The six sets include the department where the order was placed, the role of the originator of the order, an amount by which the order must be greater than or equal to, the authorization level of the originator of the order, the cost center and the supplier of the order (see Table 1).

TABLE 1

<u>User Attribute</u>	<u>Order Attributes</u>
Role	Supplier
Authorization level	Amount
Department	
Cost Center	

The user attributes are stored in the user profile database 34c and the order attributes are stored in the order database 34e. The administrator enters the desired field data into blocks 127 through 132, located below rules list 126, thereby creating requirements for a rule. If a field is not to be limited by any restriction, the administrator selects a field title with the word "any" preceding it from a list of titles in a pull-down window. The field titles are listed across the top of rules list 126. The final value entered for each rule is a route number(s). The route number(s) identifies where the order is routed to if the rule is found true. A rule is true if all entered field data blocks 127-131 of that rule are true for the order being processed and the rule type, block 132, allows the rule to remain true. Below and to the right of the rules list 126 are an add button 136 for adding rules defined within blocks 127

through 133, an update button 135 for editing rules listed in rules list 126 and a delete button 137 for deleting rules.

As shown in FIGURE 21B, the administrator tests the rules in test window 140 to ensure the entered rules adhere to desired company policy. Role, authorization level, department, and cost center information are entered in corresponding blocks in an employee information section 144. To the right of section 144 is order information section 145. Section 145 provides blocks for entering order amount and supplier name. Once the test information is entered, a get route button 147, located at bottom center of window 140, when activated displays the route of the rule(s) that applied to the entered test information. The route appears in block 146 to the left of button 147. Below sections 144 and 145 and above block 146 and button 147 is a rules list similar to rules list 126 in window 125. Plugging numerous scenarios into sections 144 and 145 provides an adequate check of the customer's predefined rules.

The user can retrieve and edit disapproved order(s) he or she originated. Retrieval is performed through main menu window 50. The user can perform edits on a disapproved and resend the order through the routing approval process. The disapproved orders are located in a in pull-down menu of the GUI.

After the user chooses to start the routing and sending process, a selection window 97 prompts the customer to perform one of three tasks, as shown in FIGURE 16. A create new order button 99, located at the top of the selection window 97, provides the user the option to create a new order for the same supplier just previously accessed or create a new order for a different supplier or from a stored template. A name this order button 100 located below the create new order button 99 gives the customer the option of saving a copy of the order just sent as a main template so it can be recalled at a later time. Finally, an exit program button 101 provides the customer the option to exit the electronic order system.

As shown in FIGURE 3, many of the windows of the present invention display a title bar 55A, a menu bar 55B, or a status bar 55C. The title bar 55A displays a title for the window it represents and common interactive window buttons. The menu bar 55B contains drop-down menus providing performance of many of the functions performed by the activation of the cursor within other parts of the window. As shown in FIGURE 3, the status bar 55C displays date, time, and a title of the program. However, as shown in FIGURE 10, the status bar 55C displays the number of line items selected, total price of the products selected, and the name of the supplier the products are being ordered from. Many of the display windows contain

a return button located in the lower left corner of the window. Activation of this button returns the customer to the previously displayed window. It can be appreciated to one of ordinary skill in the art of windows programming that the customer or program designer has the ability to manipulate display of bars 55A-C.

- 5 While the preferred embodiment of the invention has been illustrated and described, it will be appreciated that various changes can be made therein without departing from the spirit and scope of the invention.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A method of increasing the interactive capabilities of a customer graphical user interface (GUI) for interaction with multiple databases supplied by multiple suppliers remote from customers and other suppliers over a public data network, said GUI comprising the steps of:

displaying a list of vendors, wherein said vendors on the list link to corresponding databases on the public data network;

selecting a vendor from said vendor list;

displaying a selected vendor's product list from a prestored electronic catalog database;

selecting products from said product list;

automatically creating an order form containing said selected products; and

electronically sending, over said public data network, said order form to said selected vendor requesting said selected products from said product list.

2. The method of Claim 1, further comprising the step of:

electronically routing said order form through a predefined routing approval process prior to electronically sending.

3. The method of Claim 2, wherein said routing approval process includes at least one customized rule, said at least one rule includes a rule type, a minimum total dollar amount and at least one routing number identifying an authorization level location.

4. The method of Claim 3, wherein said rule type is at least one of a cumulative type, a best type and an override type.

5. The method of Claim 3, wherein said step of electronically routing further comprises the steps of:

comparing the order to said at least one rule; and

sending the order to said authorization level location identified by said at least one routing number if said comparison is true.

6. The method of Claim 5, wherein the step of electronically routing further comprises:

a series of routing lists, each list comprises predefined routing numbers, each predefined routing number is associated with an authorization level location.

7. The method of Claim 6, wherein at least one of the authorization level locations of a first list of the series of lists is different than an authorization level location of a second list of the series of lists that has the same routing number as the at least one authorization level location.

8. The method of Claim 3, wherein said at least one rule further includes a department field, a role field, an authorization level field, a cost center field and a supplier field.

9. An apparatus for increasing the interactive capabilities of a customer graphical user interface (GUI) for interaction with multiple databases supplied by multiple suppliers remote from customers and other suppliers over a public data network, said apparatus comprising:

- a means for displaying a list of suppliers, wherein said suppliers on the list link to corresponding databases on the public data network;

- a means for selecting a supplier from said supplier list;

- a means for displaying a selected supplier's product list from a prestored electronic catalog database;

- a means for selecting products from said list;

- a means for automatically creating an order form containing said selected products;

- a means for electronically sending, over said public data network, said order form to said selected supplier requesting said selected products from said product list after successfully routing said order.

10. The apparatus of Claim 9, further comprising:

- a means for electronically routing said order form through a predefined routing approval process within the customer's GUI prior to electronically sending.

11. The apparatus of Claim 10, wherein said routing approval process includes at least one customized rule, said at least one rule includes a rule type, a minimum total dollar amount and at least one routing number identifying an authorization level location.

12. The apparatus of Claim 11, wherein said rule type is at least one of a cumulative type, a best type and an override type.

13. The apparatus of Claim 11, wherein said step of electronically routing further comprises:

a means for comparing the order to said at least one rule; and

a means for sending the order to said authorization level location identified by said at least one routing number if said comparison is true.

14. The apparatus of Claim 13, wherein the step of electronically routing further comprises:

a series of routing lists, each list comprises predefined routing numbers, each predefined routing number is associated with an authorization level location.

15. The apparatus of Claim 14, wherein at least one of the authorization level locations of a first list of the series of lists is different than an authorization level location of a second list of the series of lists that has the same routing number as the at least one authorization level location.

16. The apparatus of Claim 11, wherein said at least one rule further includes a department field, a role field, an authorization level field, a cost center field and a supplier field.

17. A method of electronically routing orders through a predefined routing approval process, the method comprising the step of:

electronically routing an order form through a predefined routing approval process within a customer's GUI, wherein said routing approval process including at least one customized rule, said at least one rule includes a rule type, a minimum total dollar amount and at least one routing number identifying an authorization level location.

18. The method of Claim 17, wherein said rule type is at least one of a cumulative type, a best type and an override type.

19. The method of Claim 17, wherein said step of electronically routing further comprises the steps of:

comparing the order to said at least one rule; and

sending the order to said authorization level location identified by said at least one routing number if said comparison is true.

20. The method of Claim 19, wherein the step of electronically routing further comprises:

a series of routing lists, each list comprises predefined routing numbers, each predefined routing number is associated with an authorization level location.

21. The method of Claim 20, wherein at least one of the authorization level locations of a first list of the series of lists is different than an authorization level location of a second list of the series of lists that has the same routing number as the at least one authorization level location.

22. The method of Claim 17, wherein said at least one rule further includes a department field, a role field, an authorization level field, a cost center field and a supplier field.

23. An apparatus of electronically routing orders through a predefined routing approval process, the apparatus comprising:

a means for electronically routing an order form through a predefined routing approval process within a customer's GUI, wherein said routing approval process including at least one customized rule, said at least one rule includes a rule type, a minimum total dollar amount and at least one routing number identifying an authorization level location.

24. The apparatus of Claim 23, wherein said rule type is at least one of a cumulative type, a best type and an override type.

25. The apparatus of Claim 23, wherein said means for electronically routing further comprises:

a means for comparing the order to said at least one rule; and

a means for sending the order to said authorization level location identified by said at least one routing number if said comparison is true.

26. The apparatus of Claim 25, wherein said means for electronically routing further comprises:

a series of routing lists, each list comprises predefined routing numbers, each predefined routing number is associated with an authorization level location.

27. The apparatus of Claim 26, wherein at least one of the authorization level locations of a first list of the series of lists is different than an authorization level location of a second list of the series of lists that has the same routing number as the at least one authorization level location.

28. The apparatus of Claim 23, wherein said at least one rule further includes a department field, a role field, an authorization level field, a cost center field and a supplier field.

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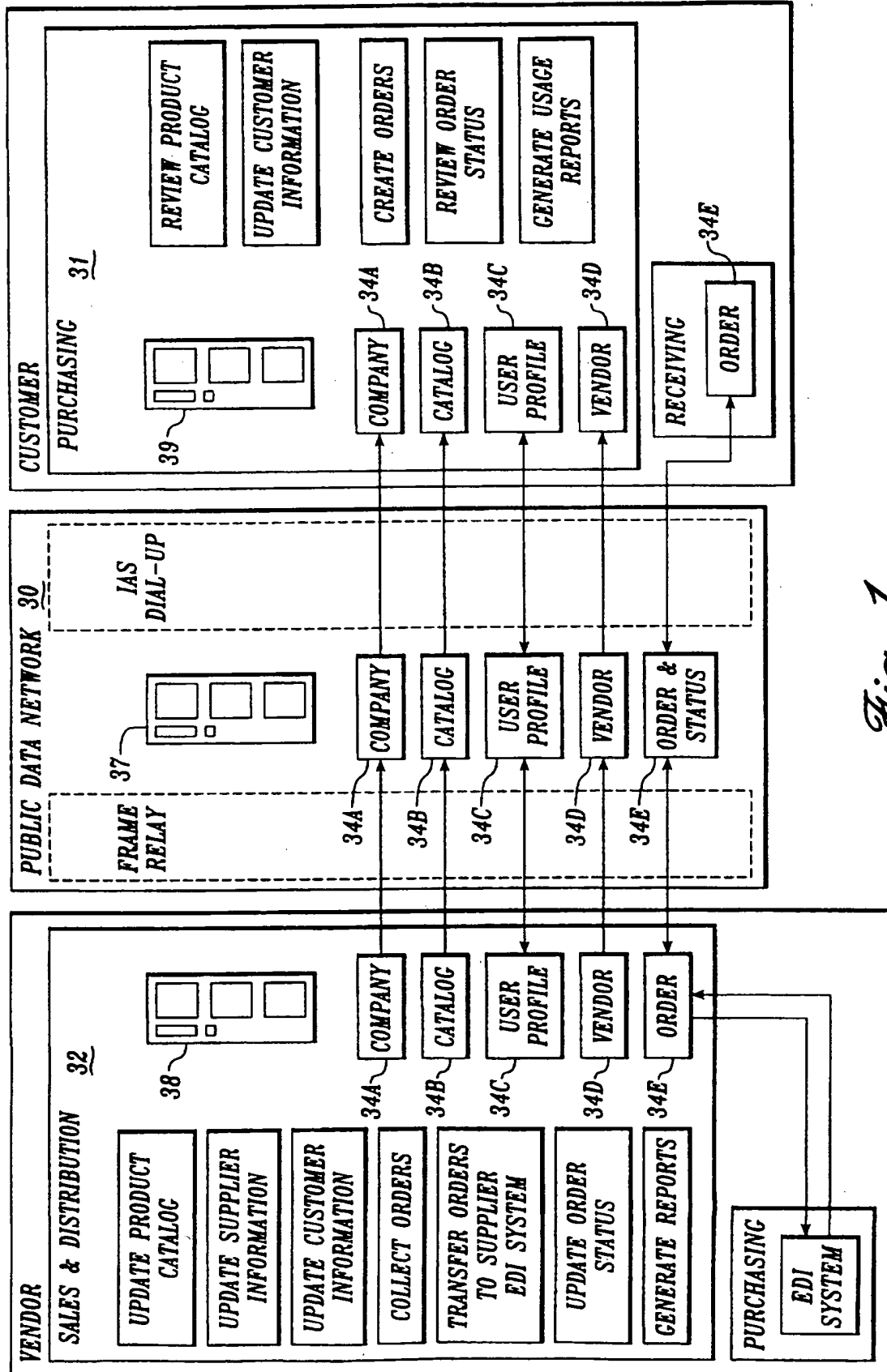


Fig. 1

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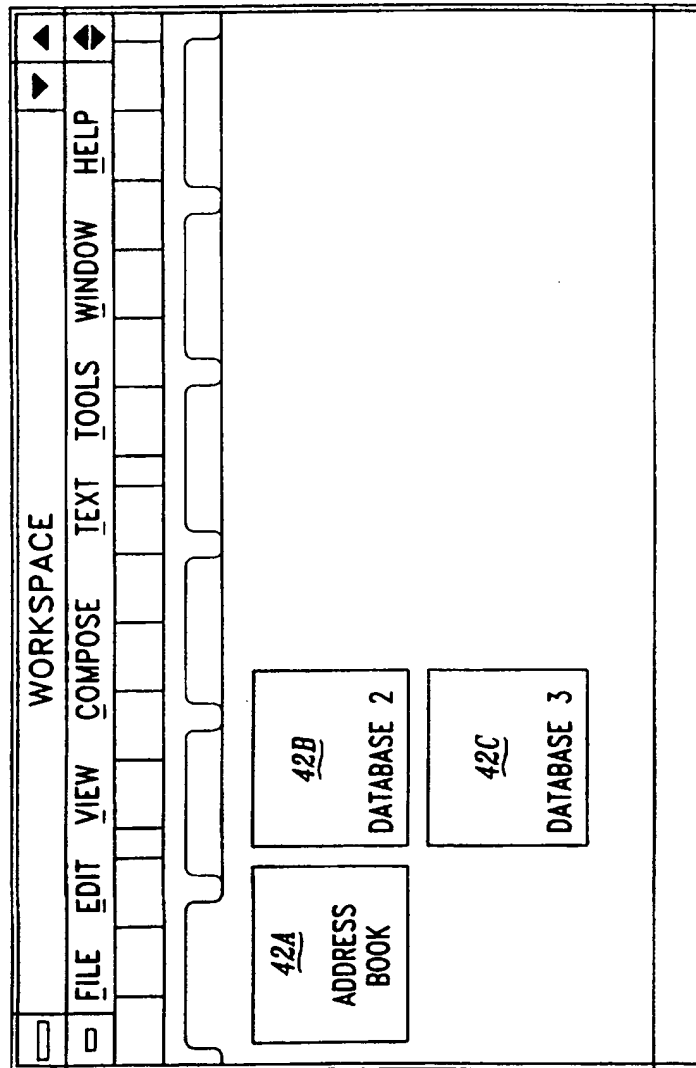


Fig. 2
(PRIOR ART)

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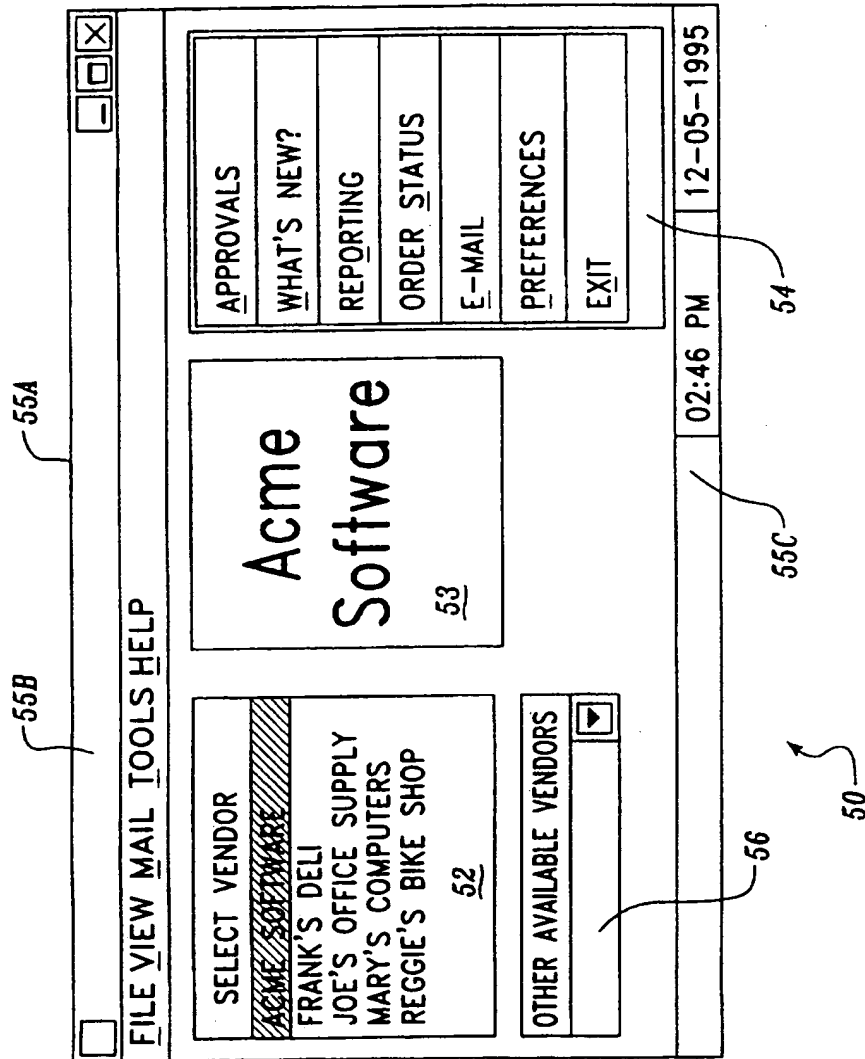


Fig. 3

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55B

FILE VIEW MAIL TOOLS HELP

Select Vendor

52

FRANK'S DELI
JOE'S OFFICE SUPPLY
MARY'S COMPUTERS
REGGIE'S BIKESHOP

OTHER AVAILABLE VENDORS

REQUEST INFO.

54A APPROVAL 54B WHAT'S NEW? 54C REPORTING 54D ORDER STATUS 54E E-MAIL 54F PREFERENCES 54G EXIT

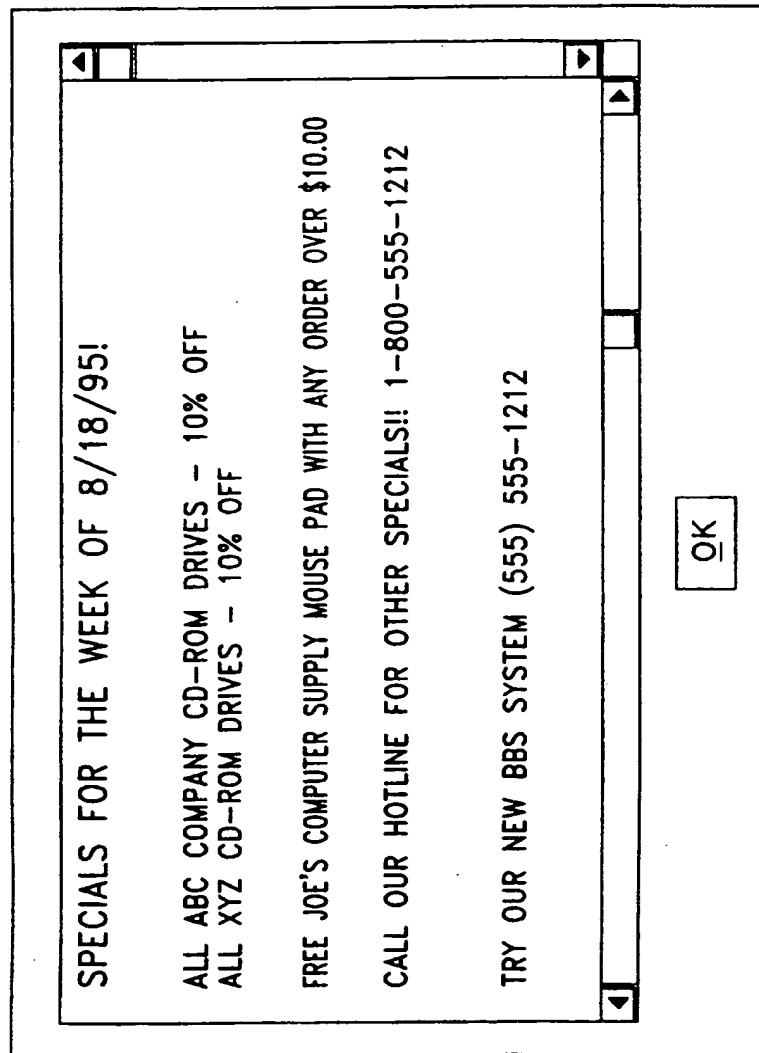
55A 02:46 PM 12-05-1995

56

54

Fig. 4

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60

Fig. 5

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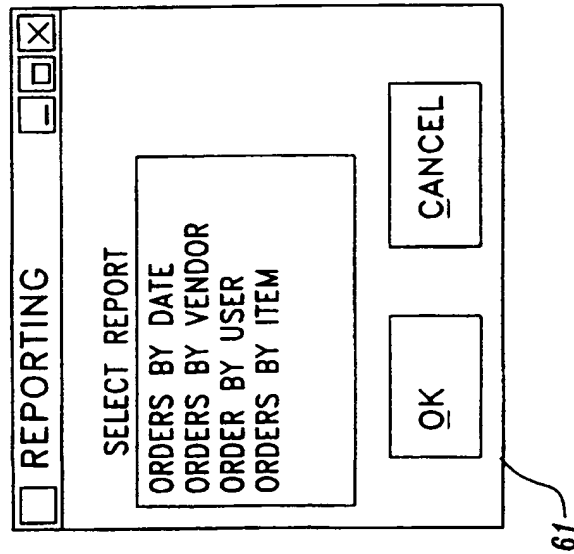


Fig. 6

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Fig.

<input type="checkbox"/> ORDER STATUS <input type="checkbox"/> FILE <input type="checkbox"/> ORDER <input type="checkbox"/> HELP													
PURCHASE ORDER 8 (REJECTION) 88 (REJECTION) <div style="background-color: #cccccc; height: 1em;"></div> PO# 12345 PO123456	<table style="width: 100%;"> <tr> <th style="width: 20%;">ORDER NUMBER</th> <th style="width: 20%;">P.O. RELEASE NO.</th> <th style="width: 20%;">STATUS</th> </tr> <tr> <td>73544</td> <td></td> <td>OPEN</td> </tr> </table> <table style="width: 100%;"> <tr> <th style="width: 20%;">PROCESS DATE</th> <th style="width: 20%;">SHIPPING METHOD</th> <th style="width: 20%;">LINE ITEMS:</th> </tr> <tr> <td>04/19/95</td> <td>GROUND</td> <td>5</td> </tr> </table> <div style="float: right; width: 40%;"> SUB-TOTAL: \$46.85 TAX: \$3.94 FREIGHT: \$7.00 MISC. CHARGES: \$0.00 TOTAL: \$57.79 </div> <div style="clear: both;"></div> <div style="text-align: center; margin-top: 20px;"> DELETE STATUS INFO </div>	ORDER NUMBER	P.O. RELEASE NO.	STATUS	73544		OPEN	PROCESS DATE	SHIPPING METHOD	LINE ITEMS:	04/19/95	GROUND	5
ORDER NUMBER	P.O. RELEASE NO.	STATUS											
73544		OPEN											
PROCESS DATE	SHIPPING METHOD	LINE ITEMS:											
04/19/95	GROUND	5											

SKU #	DESCRIPTION	QTY	QTY B/O	PROCESS DATE
1	PRODUCT A	1	2	08/01/95
2	PRODUCT X	0	1	08/02/95
3	PRODUCT Y	0	2	08/03/95
4	PRODUCT B	1	10	08/04/95
5	PRODUCT C	1	2	08/05/95
6	DESCRIPTION 6	6	10	08/06/95
7	DESCRIPTION 7	7	9	08/07/95

RETURN

65

63

99

8/28

Fig. 8A

×

READ MEMOS

TO:

JOHN DOE @ ACME

FROM:

BOB SMITH

CC:

DATE:

01/16/95 11:30:12AM

BCC:

CATEGORY:

SUBJECT:

RE: MEETING TO COORDINATE SCHEDULES

BODY:

JOHN,

I WILL TRY TO ACCOMADATE EITHER TIME. ALSO, I ASSUMED THAT WE ALL HAD FULL
CONFERENCE TICKETS. IF THAT'S NOT TRUE, HOW DO WE FIND OUT WHAT WE HAVE.
I WANTED TO ATTEND A FEW OF THE SEMINARS...

BOB

RETURN

REPLY

PREVIOUS

NEXT

9/28

Fig. 8B

The diagram shows a graphical user interface for sending a memo. It consists of a main window with a title bar containing a close button (X). Inside the window, there are three input fields: a 'TO:' field containing the text 'ACME EMAIL @ ACME', a 'SUBJECT:' field, and a large 'BODY:' text area with a vertical scrollbar. At the bottom of the window, there are two buttons: 'RETURN' on the left and 'SEND' on the right. A reference numeral '69' is positioned to the right of the window, with a line pointing to the overall interface area.

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×

USER PREFERENCES

LINE ITEMS

COLORS & BACKGROUNDS

USER -DEFINABLE LINE-ITEM LABELS

USER COMMENT 1	GL NUMBER
USER COMMENT 2	ORDER NUMBER
USER COMMENT 3	PROJECT CODE
USER COMMENT 4	DEPT. NUMBER
USER COMMENT 5	
USER COMMENT 6	
USER COMMENT 7	
USER COMMENT 8	
USER COMMENT 9	
USER COMMENT 10	

OK

CANCEL

70A

Fig. 9A

11/28

×

USER PREFERENCES

LINE ITEMS

COLORS & BACKGROUNDS

☐ SHOW TIPS

TIP COLORS

BACKGROUND

EXAMPLE TIP

BACKGRND.BMP

BUMPS3.BMP

BUMPS3A.BMP

BUMPS3B.BMP

BUMPS3BL.BMP

BUMPS3R.BMP

CLOVER1.BMP

NO BACKGROUND

BACKGROUND

BACKGROUND

OK

CANCEL

70B

Fig. 9B

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Fig. 10

☐ CATALOG FOR ACME SOFTWARE

FILE HELP

CATEGORY

XYDOS

▼

SORT ORDER

BY OPERATING SYSTEM

▼

SKU#	DESCRIPTION	UNIT PRICE	QTY	EXT. PRICE
515122	PRODUCT ABC	\$15.83	0	\$0.00
218958	PRODUCT XYZ	\$42.47	0	\$0.00
813766	PRODUCT YZX	\$28.09	0	\$0.00
533364	PRODUCT BBB	\$2.02	0	\$0.00
201699	PRODUCT CCC	\$44.44	0	\$0.00
533224	PRODUCT 123	\$88.43	0	\$0.00
100503	PRODUCT 456	\$258.96	1	\$258.96
155267	PRODUCT 789	\$41.44	0	\$0.00
330571	PRODUCT AA	\$27.59	0	\$0.00
325670	PRODUCT BB	\$27.48	0	\$0.00
201624	PRODUCT CC	\$17.78	0	\$0.00

RECORD 2381 OF 2393

OP. SYS. XXX
 INTERFACE YYY
 MACHINE ZZZ/COMPATIBLE
 MEDIA 3.5 HIGH DENSITY

CATEGORY UTILITIES
 SUB-CAT FILE MANAGER
 LICENSE SINGLE USER
 LANGUAGE ENGLISH/US

VERSION 4.0
 MFR. P/N 11-00-01612
 MSRP \$99.99

RETURN

77 ~ PRODUCT INFO

COMPLETE ORDER

ACME SOFTWARE

TOTAL AMOUNT: \$258.96

LINE ITEMS: 1

SUBSTITUTE SHEET (RULE 26)

13/28

PART# 100503
DESCRIPTION PRODUCT 456
MSRP \$64.74

SINGLE-STROKE COMMANDS LET YOU ACCESS
TOOLS FOR FILE MANIPULATION AND ARCHIVE

PRODUCT HIGHLIGHTS

- QUICK FILE LOCATION AND VIEWING
- FILE COMPRESSION AND EXTRACTION
- UNDELETE FEATURE
- SECURITY FOR SENSITIVE DATA
- TEXT EDITOR
- TRANSFER FILES BETWEEN TWO PCs

SYSTEM REQUIREMENTS

CPU: 486/33 OR ABOVE
RAM: 8MB
STORAGE: 6.5 MB
MONITOR: VGA

OK

79

Fig. 11

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Fig. 12

☐ COMPLETE ORDER FOR ACME SOFTWARE

FILE

HELP

83B

BILL TO:

83A

JANE'S SOFTWARE

1000 XXX ROAD

SUITE 1600

ATLANTA

GA

30328

82B

SHIP TO:

82A

JANE'S SOFTWARE

10 ABC STREET

SUITE 2600

NEW YORK

NY

10231

83C

ATTN:

ACCOUNTS PAYABLE

82C

ATTN:

JOE SMITH

SHIP VIA

GROUND

86

COST CENTER

502

CREDIT CARD

P.O. NO.

JSMITH-288

RELEASE NO.

PART NO.	DESCRIPTION	YOUR PRICE	QTY	AMOUNT
1	100503	PRODUCT 456	4	\$258.96

84A

SUB-TOTAL:

84B

\$258.96

87

88

MAIN MENU

89

CATALOG SELECTION

90

SKU INFO.

91

COMMENTS

92

SEND ORDER

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The figure shows a rectangular window titled "CREDIT CARD INFORMATION". At the top left of the window are three standard window control icons: a square, a square with a horizontal line, and a square with an 'X'. Below the title bar, the window contains three vertically stacked input fields. The first field is labeled "CREDIT CARD TYPE" and contains the text "CARD" with a small downward-pointing arrow on its right side. The second field is labeled "CARD NUMBER" and contains the text "1234-5678-9012-3456". The third field is labeled "EXP. DATE" and contains the text "12/95". To the right of these fields are two buttons: "OK" and "CANCEL".

Fig. 13

90

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USER PREFERENCES

LINE ITEMS SHIPPING P.O.

LINE ITEM COMMENTS

GL NUMBER
ORDER NUMBER
PROJECT CODE
DEPT. NUMBER

LINE ITEM #

LINE ITEM 1 OF 1

OK CANCEL

91

92

Fig. 14a

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USER PREFERENCES

LINE ITEMS SHIPPING P.O.

SHIPPING COMMENTS

OK CANCEL

91

93

Fig. 14B

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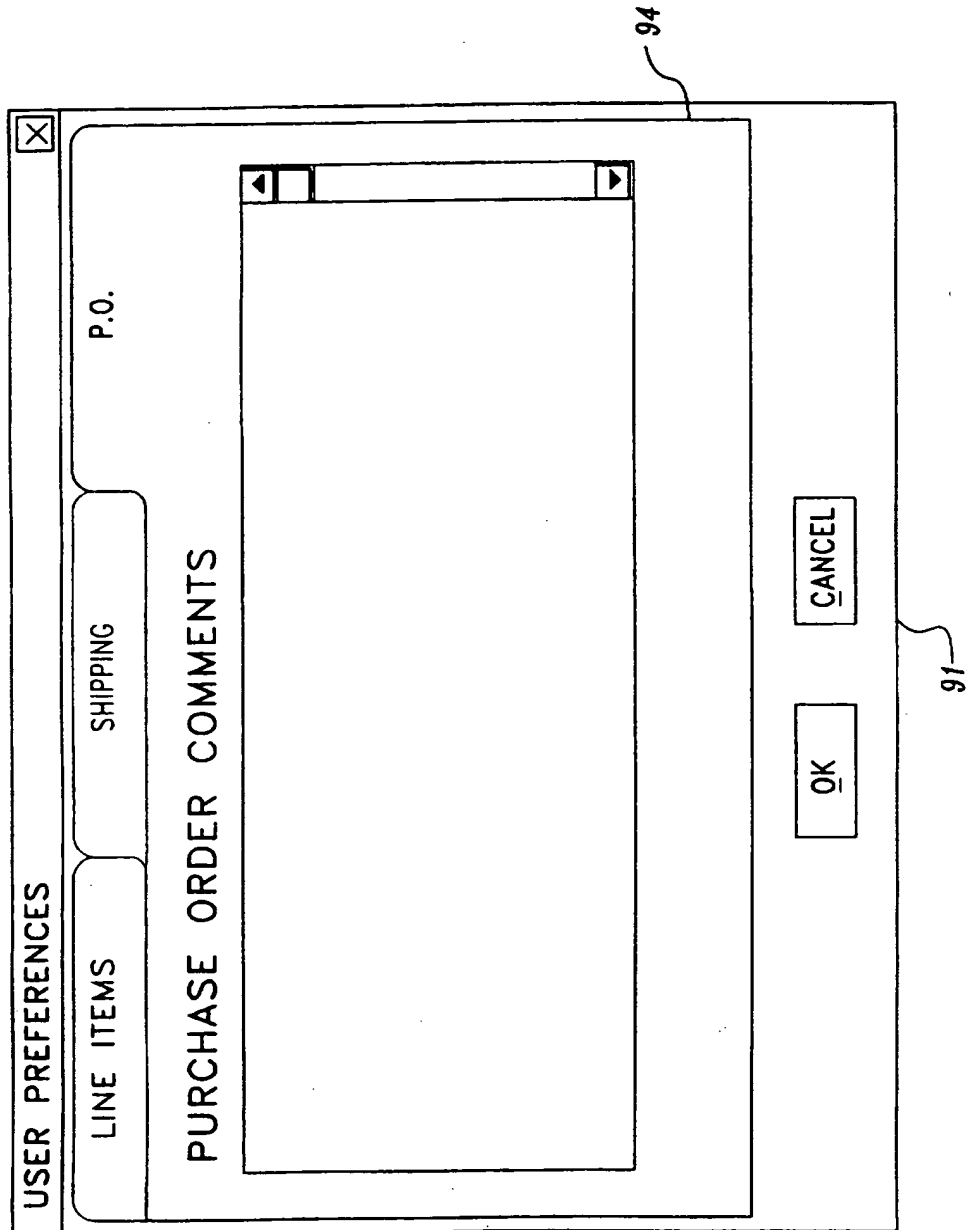


Fig. 14B

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DETAIL INFORMATION FOR '100503 - PRODUCT 456 FOR XXX'

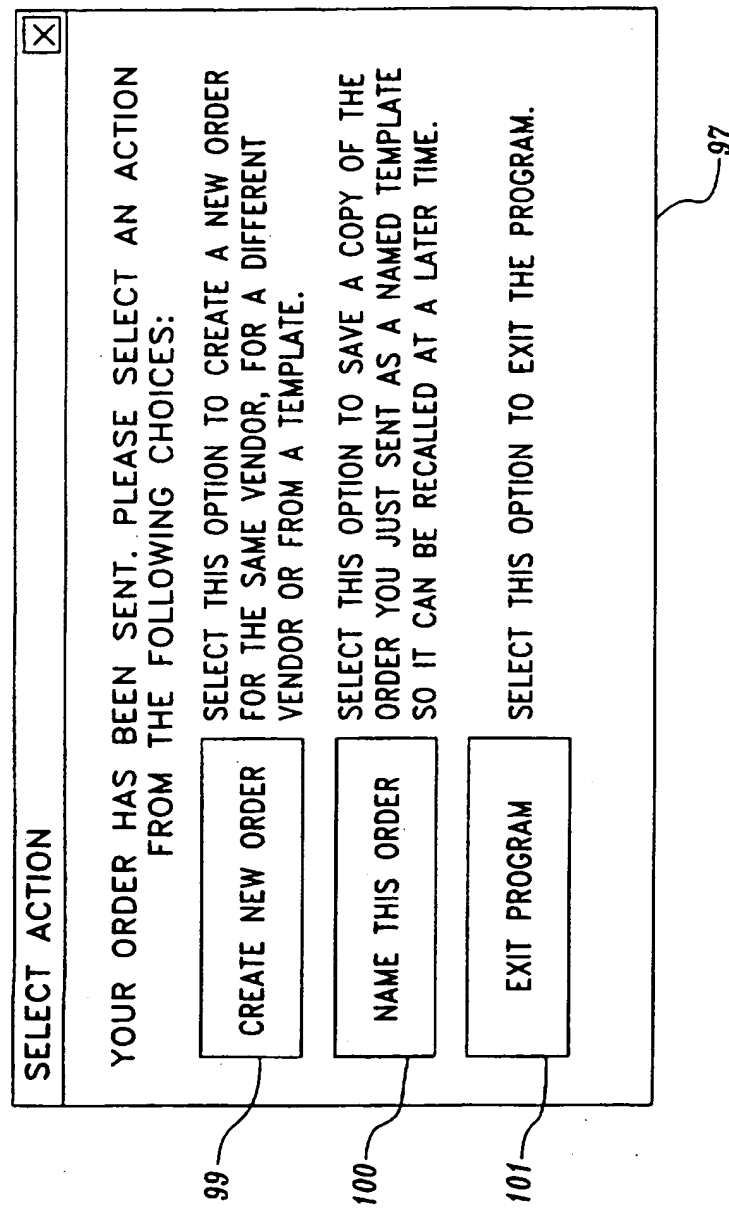
OP. SYS. XXX	CATEGORY UTILITIES	VERSION 4.0
INTERFACE YY	SUB-CAT FILE MANAGER	MFR. P/N 11-00-01612
MACHINE ZZZ/COMPATIBLE	LICENSE SINGLE USER	
MEDIA 3.5 HIGH DENSITY	LANGUAGE ENGLISH/US	

OK

96

Fig. 15

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*Fig. 16*

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SELECT ORDER TO APPROVE

AUTHOR	SUPPLIER	DATE ORDERED
JANE SMITH	ACME ACC4 TESTING	01/10/96
JANE SMITH	ACME ACC4 TESTING	01/10/96
JANE SMITH	ACME ACC4 TESTING	01/11/96
JOHN DOE, JR.	JOE'S OFFICE SUPPLY	01/12/96

OK CANCEL

110

Fig. 17A

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Fig. 17B

<input type="checkbox"/> APPROVE/REJECT ORDER <input type="button" value="FILE"/> <input type="button" value="HELP"/>			
BILL TO: <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> JANE'S SOFTWARE 1000 XXX ROAD SUITE 1600 ATLANTA GA 30328 </div>		SHIP TO: 10 ABC STREET <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> JANE'S SOFTWARE 10 ABC STREET SUITE 2600 NEW YORK NY 10231 </div>	
ATTN: <input style="width: 100%;" type="text"/>		ATTN: <input style="width: 100%;" type="text"/>	
SHIP VIA <input style="width: 100%;" type="text"/>		CREDIT CARD <input style="width: 100%;" type="text"/>	
COST CENTER <input style="width: 100%;" type="text"/>		P.O. NO. <input style="width: 100%;" type="text"/> 678 RELEASE NO. <input style="width: 100%;" type="text"/>	
PART NO.	DESCRIPTION	YOUR PRICE	QTY AMOUNT
SUB-TOTAL: <input style="width: 150px;" type="text"/>			
ORDERED BY: JOHN DOE, JR ON 01/12-96 FROM JOE'S OFFICE SUPPLY			
<input type="button" value="MAIN MENU"/>		<input type="button" value="APPROVE"/>	
<input type="button" value="REJECT"/>		<input type="button" value="REJECT"/>	

The diagram shows a rectangular dialog box with a title bar at the top. The title bar contains the word "APPROVAL" on the left and a close button (a square with an 'X') on the right. Below the title bar, the text "PLEASE ENTER COMMENTS (OPTIONAL)." is displayed. In the center of the dialog box is a large, empty rectangular area for text input. At the bottom right of the dialog box are two buttons: "OK" and "CANCEL". A curved line with the number "116" points to the right side of the dialog box.

Fig. 17C

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☐ REQUISITION NOTIFICATION

FILE EDIT VIEW MAIL COMPOSE TEXT TOOLS DESIGN WINDOW HELP

CATEGORIZE... TO DO... REPLY REPLY TO ALL... FORWARD

TO: JOHN DOE, JR.
CC: AUTOMATIC NOTIFICATION
FROM: 01/12/96 02:21:54 PM
DATE: REQUISITION NOTIFICATION
SUBJECT: YOUR REQUISITION HAS BEEN APPROVED BY JOHN DOE, JR. ON 01/12/96 02:21:52PM
AND IS NOW BEING ROUTED TO JANE SMITH FOR HIS/HER APPROVAL.

THESE ARE ADDITIONAL COMMENTS: GREAT WORK, JOE!!!

-117

Fig. 18

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ROUTING LIST

X

THE FOLLOWING PEOPLE NEED TO APPROVE YOUR ORDER BEFORE IT WILL BE SENT TO THE SUPPLIER:

- JOHN DOE, JR.
- JANE SMITH

DO YOU WANT TO CONTINUE SENDING THIS ORDER?

YES

NO

119

Fig. 19

Fig. 20

REQUISITION APPROVAL

FILEEDITVIEWCOMPOSETEXTTOOLSWINDOWHELP

CATEGORIZE...

TO DO...

REPLY

REPLY TO ALL...

FORWARD

TO: JOHN DOE, JR.

CC:

FROM: AUTOMATIC NOTIFICATION

DATE: 01/12/96 02:13:37 PM

SUBJECT: REQUISITION NOTIFICATION

YOU NEED TO APPROVE/REJECT A REQUISITION FOR JOHN DOE, JR. ORDERED FROM JOE'S OFFICE SUPPLY ORDERED ON 01/12/96 AT 02:13 PM.

120

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Fig. 21a

☐ DEFINE REQUISITION RULES

TYPE	DEPT	ROLE	AMOUNT	AUTH. LEVEL	COST CENTER	SUPPLIER	ROUTE
B		ADMINISTRATOR	\$1500.00	EMPLOYEE			2
B		ADMINISTRATOR	\$100.00	EMPLOYEE			5
C		ADMINISTRATOR	\$50.00				104
C		REQUISITIONER	\$1000.00	EMPLOYEE			3
C		REQUISITIONER	\$500.00	EMPLOYEE			2
C		REQUISITIONER	\$0.00	EMPLOYEE			1
O		BUYER	\$0.00	EMPLOYEE			4
O		REQUISITIONER	\$1000.00	MANAGER			101
O		REQUISITIONER	\$100,000.00	VICE			8

IF PRICE IS GREATER THAN 1000.00

AND THE USER'S ROLE IS REQUISITIONER

AND THE USER'S AUTHORIZATION LEVEL IS MANAGER

AND THE USER'S DEPARTMENT IS ANY DEPARTMENT

AND THE ORDER COST CENTER IS

AND IT WAS ORDERED FROM SUPPLIER

THEN ROUTE TO THIS PERSON FOR APPROVAL

THE RULE TYPE IS

ADD

UPDATE

DELETE

EXIT

Fig. 21B

DEFINE REQUISITION RULES

EMPLOYEE INFORMATION

ROLE

REQUISITIONER

▼

AUTH LEVEL

MANAGER

▼

DEPARTMENT

▼

COST CENTER

▼

ORDER INFORMATION

AMOUNT

5000.00

▼

VENDOR

▼

TYPE	DEPT	ROLE	AMOUNT	AUTH. LEVEL	COST CENTER	VENDOR	ROUTE
0	<div style="background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px); width: 40px; height: 20px;"></div>	REQUISITIONER	100000.00	VICE PRESIDENT			8
0		REQUISITIONER	1000.00	MANAGER			101
C		REQUISITIONER	0.00	EMPLOYEE			1
C		REQUISITIONER	\$1000.00	EMPLOYEE			3
C		REQUISITIONER	\$500.00	EMPLOYEE			2

ROUTE: 101

GET ROUTE

140

GET ROUTE

EXIT

147

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US96/20751

A. CLASSIFICATION OF SUBJECT MATTER		
IPC(6) : G06F 153:00 US CL : 395/226, 227 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) U.S. : 395/226, 227, 244; 235/379-385; 340/825.33-825.35; 379/91		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 5,310,997 (ROACH ET AL.) 10 MAY 1994, COLUMN 4, LINE 5 TO COLUMN 6, LINE 34.	1-28
Y	US, A, 5,247,575 (SPRAGUE ET AL) 21 SEPTEMBER 1993, COLUMN 6, LINES 37-57.	1-28
Y	US, A, 4,567,359 (LOCKWOOD) 28 JANUARY 1986, COLUMN 3, LINE 60 TO COLUMN 8, LINE 19.	1-28
Y	US, A, 4,992,940 (DWORKIN) 12 FEBRUARY 1991, COLUMN 1, LINE 60 TO COLUMN 3, LINE 19.	1-28
A	US, A, 4,775,935 (YOURICK) 04 OCTOBER 1988, COLUMN 2, LINE 5 TO COLUMN 3, LINE 21.	1-28
Y	US, A, 4,734,858 (SCHLAFLY) 29 MARCH 1988, COLUMN 2, LINE 56 TO COLUMN 3, LINE 3 TO COLUMN 8, LINE 32.	1-28
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
A	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
E	earlier document published on or after the international filing date	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
L	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
O	document referring to an oral disclosure, use, exhibition or other means	
P	document published prior to the international filing date but later than the priority date claimed	*G* document member of the same patent family
Date of the actual completion of the international search 27 FEBRUARY 1997		Date of mailing of the international search report 28 MAR 1997
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